

Northeast Diesel Collaborative

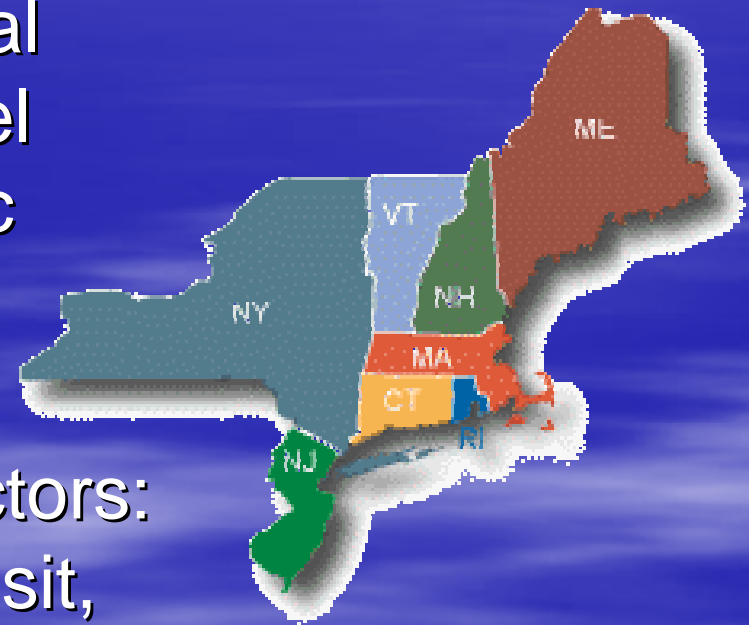
Air Quality, Health Effects, and Diesel Emissions

**Workshop on Reducing Diesel Emissions
Providence, RI
March 28, 2008**

Northeast Diesel Collaborative

Established by EPA, NESCAUM, the eight Northeast states, and Puerto Rico to:

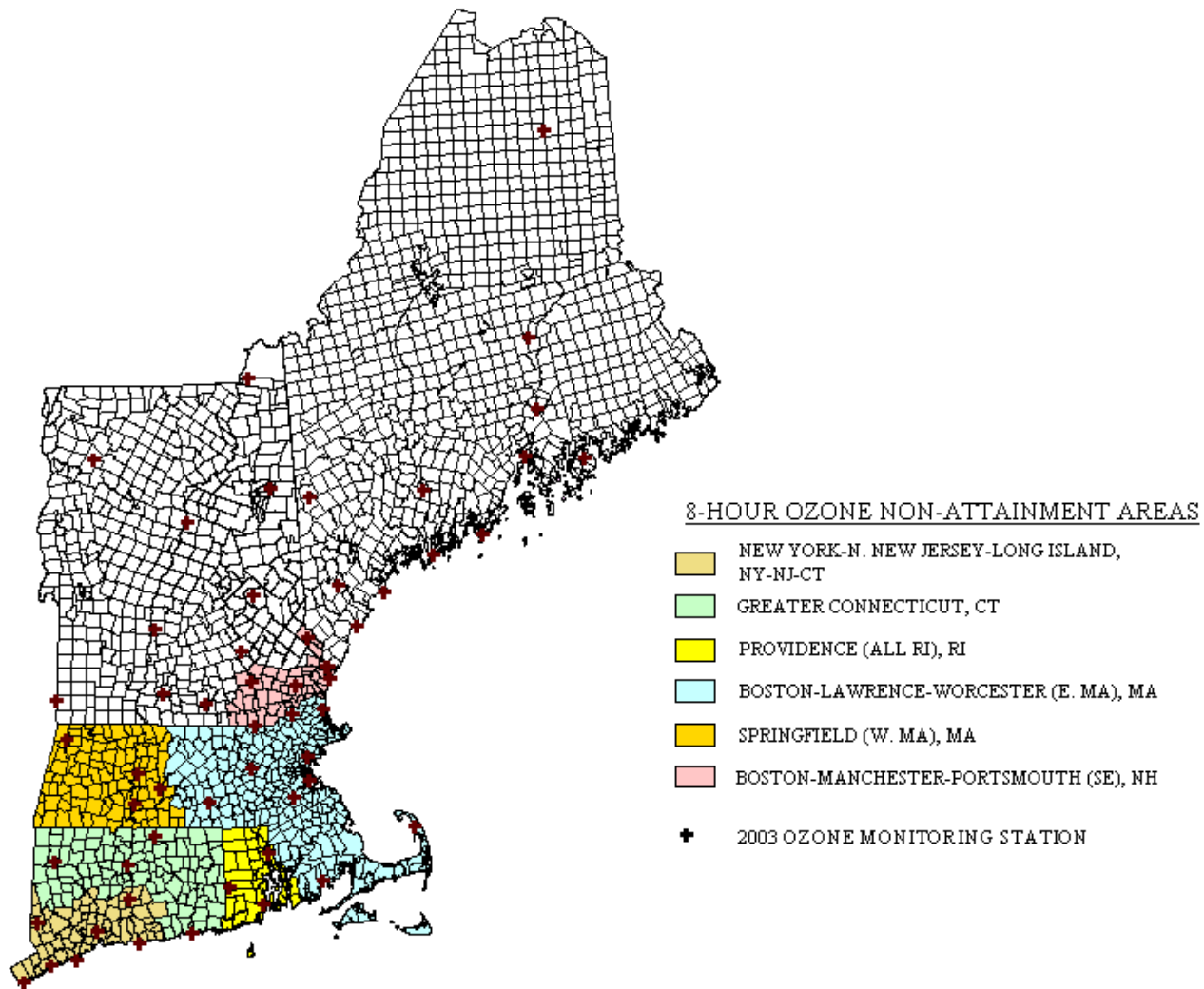
- Expand and develop regional partnerships to reduce diesel emissions and protect public health
- Build on success to further reduce emissions in key sectors: municipal, construction, transit, freight, and ports/authorities
- Leverage new funding



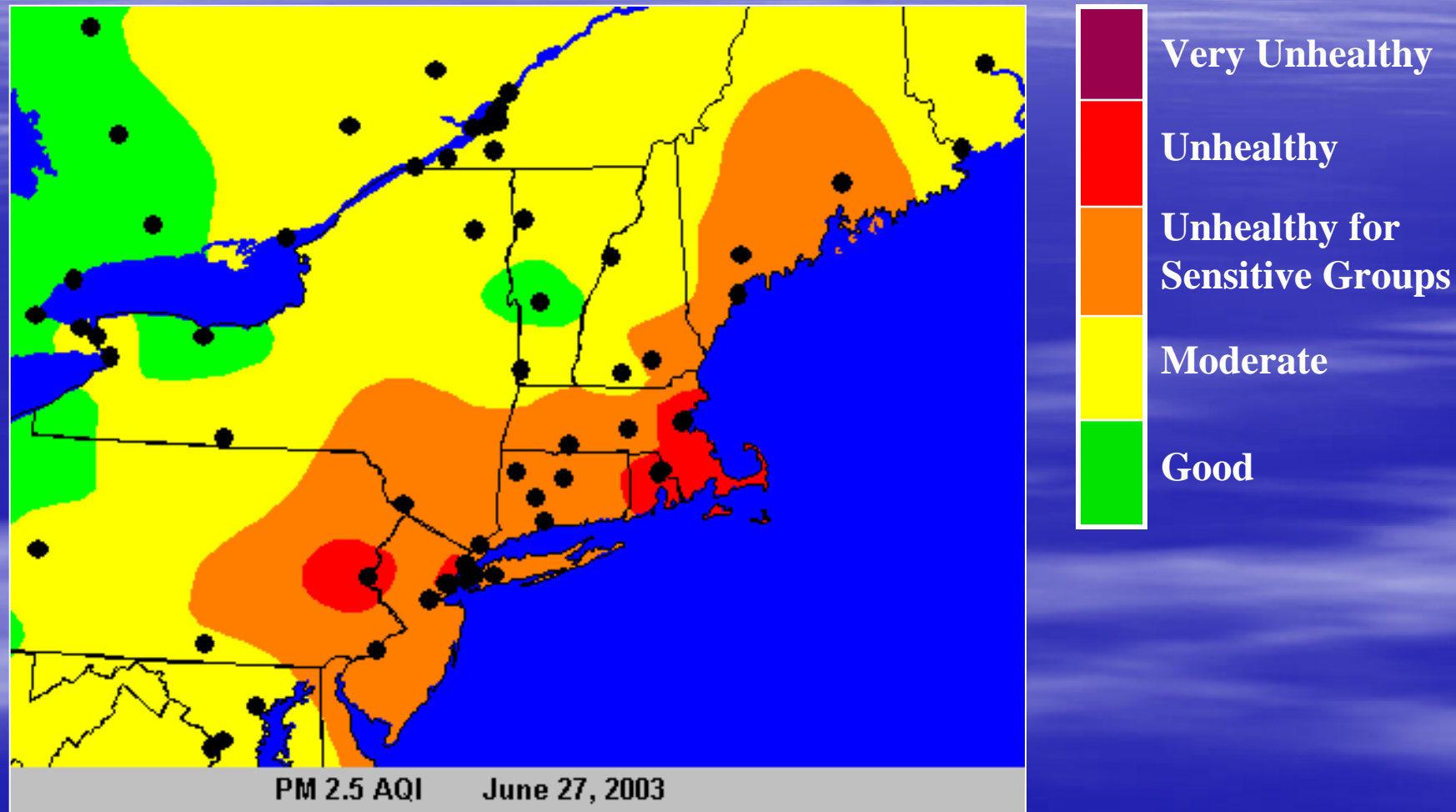
Regional Air Quality

- 82 counties in CT, MA, NH, NJ, NY, and RI do not meet the federal ozone standard
- 25 counties in CT, NJ, and NY—with more than 21 million people—do not meet the standard for fine particles; other urban areas barely meet the standard

Ozone Non-Attainment



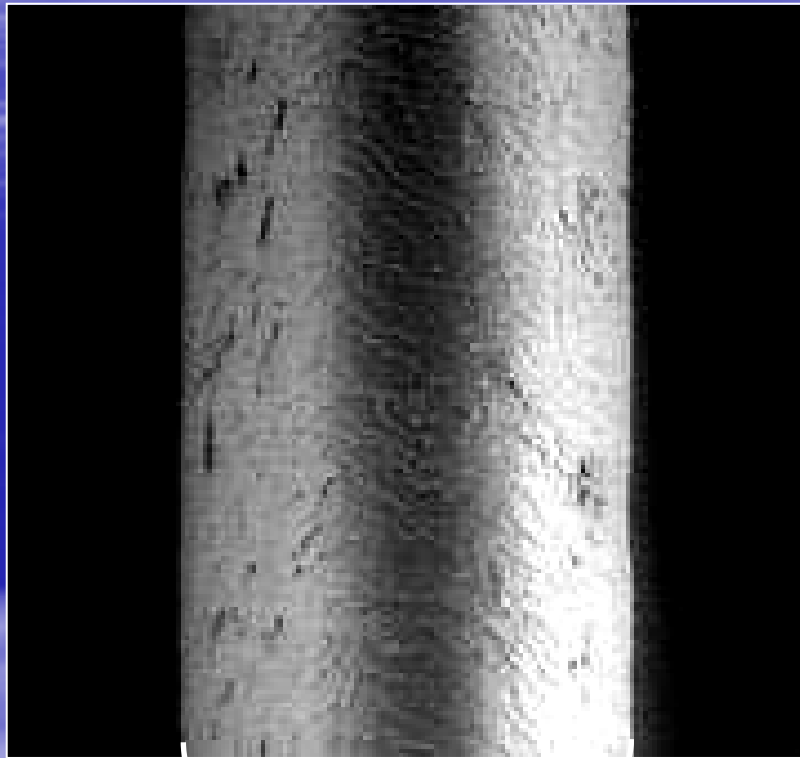
Unhealthy Levels of PM_{2.5}



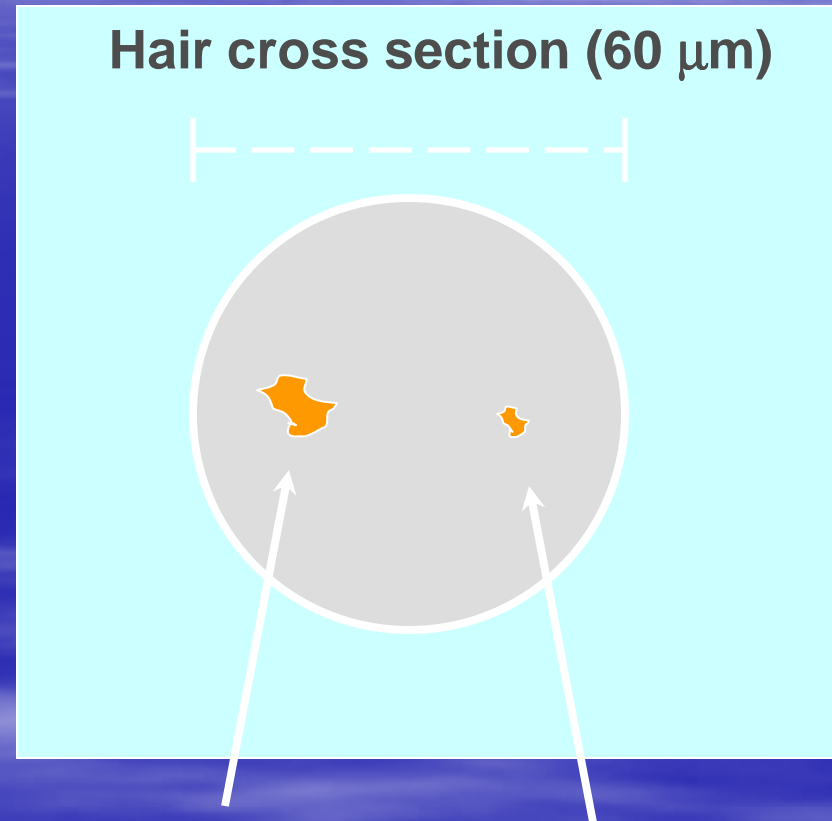
Health Effects

- Fine particles penetrate deeply into the lungs, are likely human carcinogens, and can aggravate asthma, cause lung damage, and lead to premature death
- Breathing ground-level ozone harms lung tissue, reduces lung function, aggravates existing asthmatic conditions, may reduce the body's ability to fight off respiratory infections, and may have cardiovascular effects that increase the risk of heart attack and stroke

Fine Particles



Human Hair
(60 μm diameter)



PM10
(10 μm)

PM2.5
(2.5 μm)

Health Effects

- At particular risk from fine particles and ozone are those with pre-existing respiratory conditions, children, and even healthy adults who are very active near PM hot spots, PM sources, or during times of high ozone levels
- All six New England states have childhood asthma rates above 10%; areas of NYC near 15%; Puerto Rico 30%

Clean Air Strategies

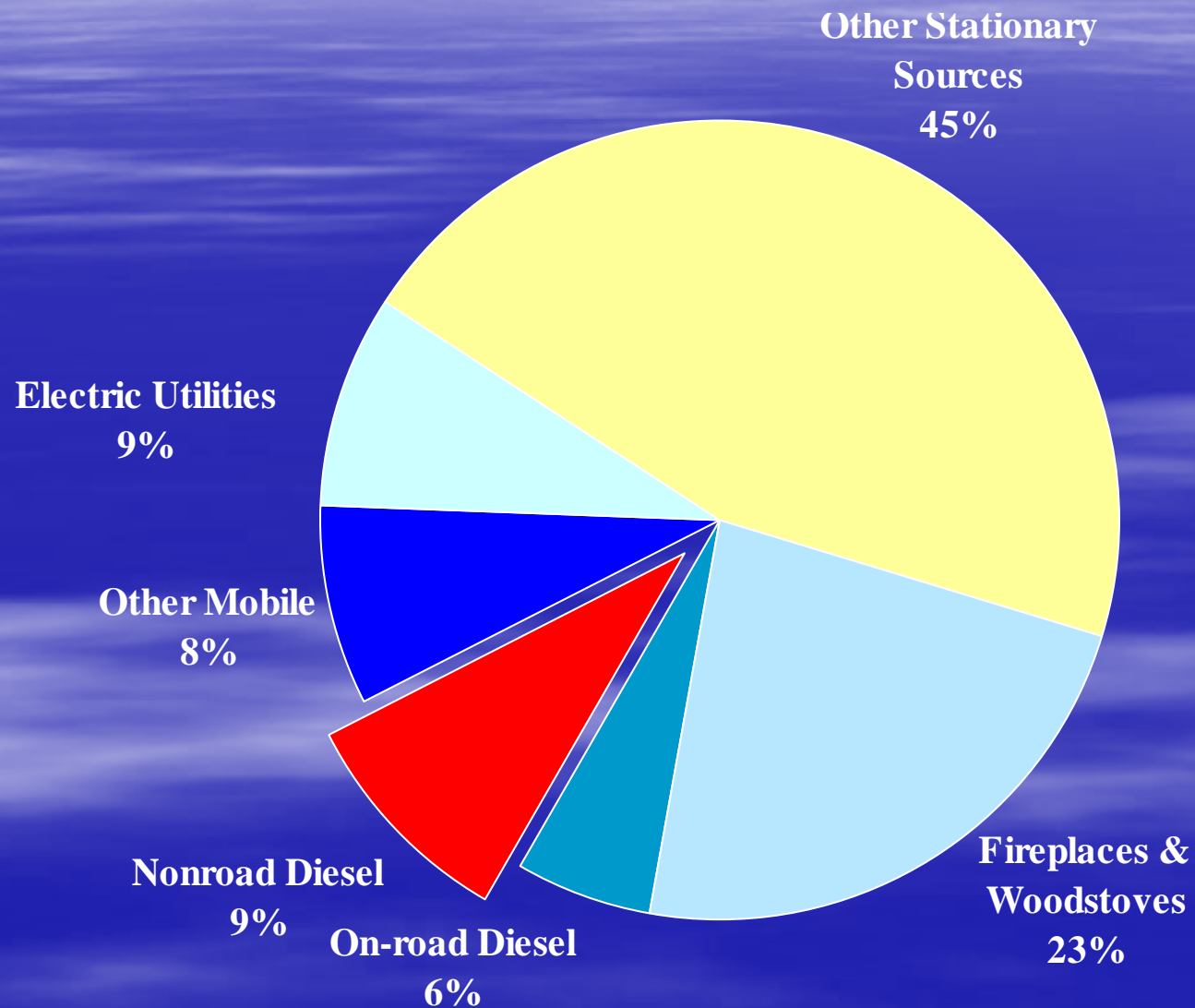
- Problem requires federal, state, and regional efforts to reduce $PM_{2.5}$ and NO_x
- Agencies focused on range of strategies for stationary and mobile sources
- Examples: new federal engine and fuel standards, low-sulfur heating oil standard, comprehensive state diesel plans, and Northeast Diesel Collaborative

Why Focus on Diesel Emissions?

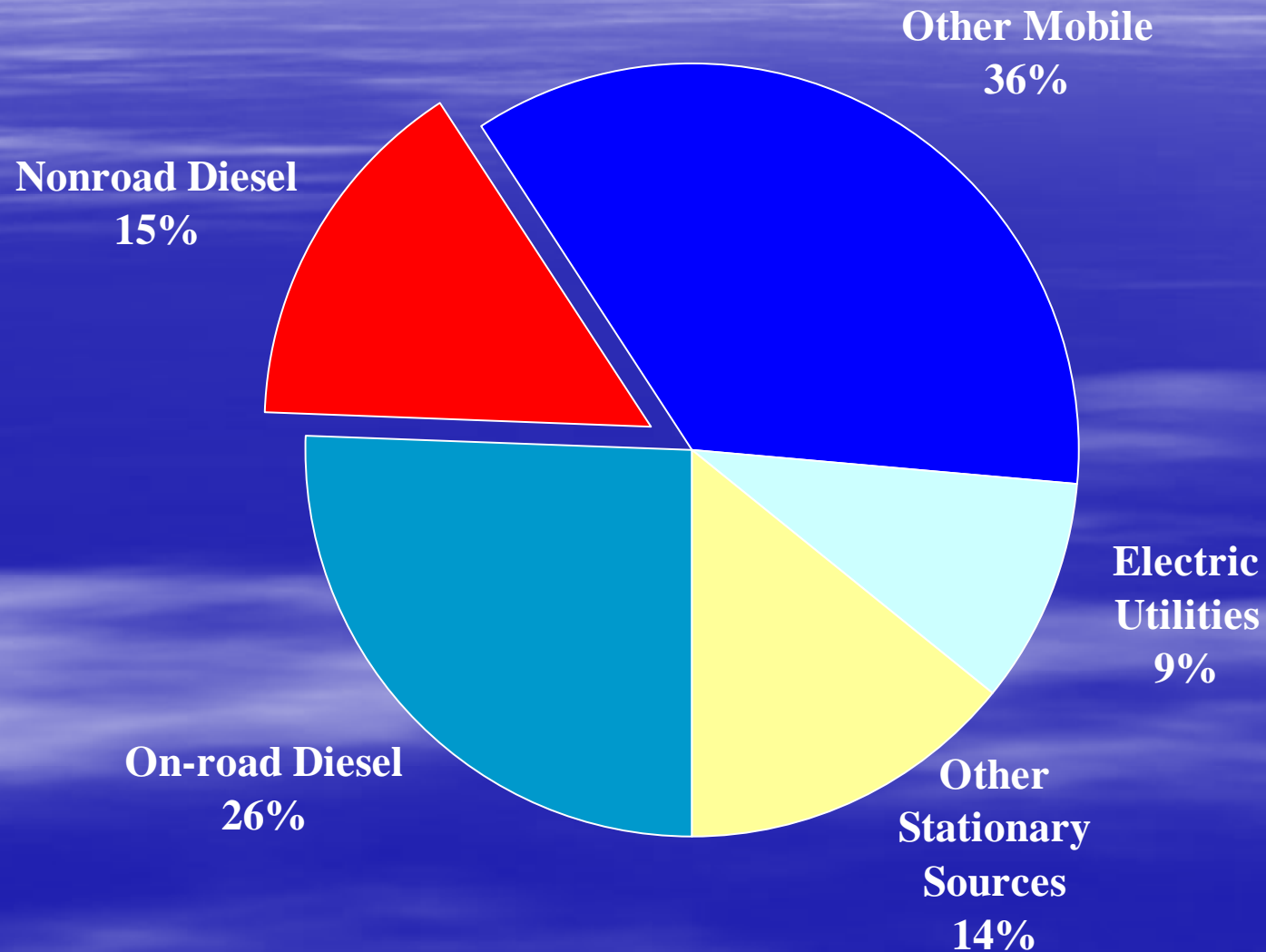
Diesel exhaust is a primary source of pollutants that harm human health and the environment

- Fine particles ($PM_{2.5}$)
- Carbon monoxide (CO): 77% of emissions come from transportation
- Nitrogen oxides (NO_x): precursor of both ozone and acid rain
- Hydrocarbons: precursor of ground-level ozone

Source of PM Emissions in NE



Source of NOx Emissions in NE



#2 Distillate Fuel Use in NE

(Annual 2005, 10⁶ Gallons)

State	Hwy Fuel	Non-road	Marine Fuel	Home Heating	IND	COMM	Total
CT	305	37	7	626	10	118	1103
ME	175	32	10	353	18	120	709
MA	422	142	22	773	16	169	1555
NH	102	27	3	201	10	62	405
NJ	937	81	98	369	23	134	1642
NY	1105	210	9	1471	58	604	3457
RI	58	7	4	157	4	28	257
VT	62	20	0	95	10	35	222

Diesel Solutions

- Tighter federal standards for new diesel engines and fuel, beginning with highway in 2007, nonroad in 2008
- Emission controls on existing engines, which reduce PM, CO, and HC by 20-95% and NOx by up to 40%
- Cleaner fuels
- Engine upgrades, replacements
- Idle reduction technologies, policies
- Hybrid technologies



Local Policies



- NYC has local laws requiring emission controls on construction equipment, garbage and recycling trucks, sightseeing buses, school buses
- Five NY counties signed agreement with federal and state agencies to adopt measures to reduce diesel emissions via retrofits, clean fuels, idle reduction, fuel-efficient vehicles

Successful Projects

■ Municipal

- NYC Sanitation Dept. retrofitting 250 vehicles
- NYC Parks Dept. replacing gas & diesel vehicles with electric plug-ins

■ Transit

- Nearly 5,000 buses in major cities (New York, Boston, Providence, Stamford) use filters and ULSD
- Nearly 4,000 older diesel buses replaced with CNG, hybrid, DPF-equipped buses in Boston and New York
- All ferries in New York Harbor being retrofitted
- CT Transit demonstrating hybrid, hydrogen buses



Successful Projects

- **Private Transit Retrofits**

- 17 hospital shuttle buses in Boston
- 35 tourist trolleys in Boston
- 20 Coach USA sightseeing buses in New York City
- 2 van/shuttle fleets in New York City

- **Construction Retrofits**

- 200 vehicles at the Big Dig
- 250 vehicles at I-95 Q Bridge project, CT
- All feasible vehicles/equipment at World Trade Center and subway reconstruction projects
- VT Agency of Transportation demonstrating retrofits on construction and highway maintenance vehicles

Successful Projects

■ Ports/Authorities

- 5 locomotive utility track vehicles at Port of NY-NJ retrofit with idle reduction technologies and 2 also with DOCs
- Entire fleet of diesel- and gas-powered ground support equipment at Delta Shuttle at LaGuardia replaced with plug-in electric equipment

■ Freight

- Installed idle-reduction technologies and emission controls on 175 trucks in NJ
- Electrified 238 truck bays at 5 truck stops along NY Thruway, NJ Turnpike
- Installed auxiliary power units on 30 switchyard locomotives in MA & CT to reduce idling

Current Projects

- MA spending \$22.5 m for school and transit bus retrofits statewide
- CT, ME, NJ, RI have statewide school bus retrofit programs
- NYC and surrounding counties have \$143 m in clean diesel & fuels projects in the 2008-12 regional transportation plan (funded by CMAQ)
- NESCAUM retrofitting 500+ utility company vehicles in 8 states with \$1.5 m in settlement funds
- Partners involved in locomotive, marine, and construction pilot projects

What You Can Do

- Use Collaborative-sponsored tools: contract specifications, model legislation, data, research
- Promote clean diesel at the state, local, agency, and institutional levels
- Develop diesel projects for funding via state and EPA grants, CMAQ



Debbi Edelstein
Manager, Northeast Diesel Collaborative
dedelstein@nescaum.org
617.259.2080